

CpSc 212 Lab: Recursion

We do a project from Weiss. Consider an $N \times N$ grid in which some squares are occupied. Two squares belong to the same group if they share a common edge (not just a corner). In the figure there is one group of four occupied squares, three groups of two occupied squares, and two individual occupied squares.

```

.....X
...XX...X
.....
....X..X..
...X...X..
.....XX.
....XX....
.....
.....
.....

```

In this lab, you are to develop a C++ class called Recursion that contains the following:

- a 2D int array with 10 rows and 10 columns.
- a constructor that reads a file into the array. Each line of the file is a row of the array. The character . should be converted to 0, and any other character converted to 1

A sample input file is [here](#) or [here](#).

- a function print() that causes the printout of all groups contained in the 2D array. It should save a copy of the member array, and make use of a recursive method printGroupWith.
- a *recursive* method printGroupWith. (Your choice of parameter list, but mine is just int row, int col.) This function should update the array as it goes.
- a main function in Recursion.cpp that takes a filename from the command line, creates a suitable Recursion object and calls print on it.

For example, for the sample grid above, the output of your program should be something like (not including comments): Note that your ordering might be different

```

Group 1:  (0,9) (1,9)          // the two occupied squares in upper right corner
Group 2:  (1,3) (1,4)          // the two occupied squares in row 1
Group 3:  (3,4)
Group 4:  (3,7) (4,7) (5,7) (5,8)
Group 5:  (4,3)
Group 6:  (6,4) (6,5)

```

You may include additional private helper functions, if you wish.